

**WHAT IS CLAIMED IS:**

1. An elongated rope light, comprising:
  - two or more electrical wires longitudinally extended therealong; and
  - 5 one or more pairs of first and second illuminating units, each pair being electrically coupled between any two electrical wires, each illuminating unit including a plurality of LEDs, and the first and the second illuminating units in each pair being connected in parallel,
  - whereby applying an ac between any two electrical wires sequentially will
  - 10 lighten up the first and the second illuminating units in each pair alternately by enabling current to flow through the LEDs in each illuminating unit toward a predetermined direction when the LEDs are conducted.
2. The rope light of claim 1, wherein the number of the electrical wires is two
- 15 and the number of the illuminating units is two.
3. The rope light of claim 1, wherein the number of the electrical wires is three and the number of the illuminating units is six.
- 20 4. The rope light of claim 3, wherein
  - the first illuminating unit comprises a plurality of LEDs between the first and the second electrical wires;
  - the second illuminating unit comprises a plurality of LEDs between the first and the second electrical wires and being in parallel with the first illuminating
  - 25 unit;
  - a positive terminal of the first illuminating unit is electrically coupled to the first electrical wire, and a negative terminal thereof is electrically coupled to the

second electrical wire;

a positive terminal of the second illuminating unit is electrically coupled to the second electrical wire, and a negative terminal thereof is electrically coupled to the first electrical wire;

- 5        the third illuminating unit comprises a plurality of LEDs between the second and the third electrical wires;

the fourth illuminating unit comprises a plurality of LEDs between the second and the third electrical wires and being in parallel with the third illuminating unit;

- 10       a positive terminal of the third illuminating unit is electrically coupled to the second electrical wire, and a negative terminal thereof is electrically coupled to the third electrical wire;

a positive terminal of the fourth illuminating unit is electrically coupled to the third electrical wire, and a negative terminal thereof is electrically coupled to the  
15       second electrical wire;

the fifth illuminating unit comprises a plurality of LEDs between the third and the first electrical wires;

the sixth illuminating unit comprises a plurality of LEDs between the third and the first electrical wires and being in parallel with the fifth illuminating unit;

- 20       a positive terminal of the fifth illuminating unit is electrically coupled to the third electrical wire, and a negative terminal thereof is electrically coupled to the first electrical wire; and

a positive terminal of the sixth illuminating unit is electrically coupled to the first electrical wire, and a negative terminal thereof is electrically coupled to the  
25       third electrical wire.

5.    The rope light of claim 4, wherein the LEDs in each illuminating unit are

electrically coupled together in series.

6. The rope light of claim 1, wherein the rope light has a section of square.

5 7. The rope light of claim 1, wherein the rope light has a section of flat rectangle.

8. The rope light of claim 1, wherein the rope light has a section of oval.

10 9. The rope light of claim 1, wherein the number of the electrical wires is four and the number of the illuminating units is twelve.

10. The rope light of claim 1, wherein the number of the electrical wires is five and the number of the illuminating units is twenty.

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11. The rope light of claim 1, wherein the LED is a plate-shaped LED, COB (chip on board) type LED, SMD (surface mounting) LED, or LED dice bonding fixed on a circuit board by soldering extended conductive wires of the LED on the circuit board.

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12. An elongated rope light, comprising:

an elongated mounting strap including an elongate, axial groove and two side ridges;

a first and a second electrical wires longitudinally extended along the  
25 ridges;

a first and a second illuminating units on the groove, each illuminating unit being electrically coupled between the electrical wires, and including a plurality

of LEDs fixed on a circuit board wherein the LEDs in each illuminating unit are electrically coupled together in series by connecting conductive wires therebetween; the first LED is electrically coupled to a positive terminal of the illuminating unit; the last LED is electrically coupled to a negative terminal of the illuminating unit; a positive terminal of the first illuminating unit is electrically coupled to the first electrical wire, and a negative terminal thereof is electrically coupled to the second electrical wire; and a positive terminal of the second illuminating unit is electrically coupled to the second electrical wire, and a negative terminal thereof is electrically coupled to the first electrical wire; and

10 an outer cover layer for enclosing the the first and the second electrical wires, and the first and the second illuminating units by means of injection molding,

whereby applying a positive voltage to the first electrical wire with respect to the second electrical wire will lighten up the first illuminating unit with the second illuminating unit off, applying a positive voltage to the second electrical wire with respect to the first electrical wire will lighten up the second illuminating unit with the first illuminating units off.

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**13.** The rope light of claim 12, wherein the rope light further comprises three of the electrical wires and six of the illuminating units.

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**14.** The rope light of claim 13, wherein

the first illuminating unit comprises a plurality of LEDs between the first and the second electrical wires;

25 the second illuminating unit comprises a plurality of LEDs between the first and the second electrical wires and being in parallel with the first illuminating unit;

a positive terminal of the first illuminating unit is electrically coupled to the first electrical wire, and a negative terminal thereof is electrically coupled to the second electrical wire;

5 a positive terminal of the second illuminating unit is electrically coupled to the second electrical wire, and a negative terminal thereof is electrically coupled to the first electrical wire;

the third illuminating unit comprises a plurality of LEDs between the second and the third electrical wires;

10 the fourth illuminating unit comprises a plurality of LEDs between the second and the third electrical wires and being in parallel with the third illuminating unit;

a positive terminal of the third illuminating unit is electrically coupled to the second electrical wire, and a negative terminal thereof is electrically coupled to the third electrical wire;

15 a positive terminal of the fourth illuminating unit is electrically coupled to the third electrical wire, and a negative terminal thereof is electrically coupled to the second electrical wire;

the fifth illuminating unit comprises a plurality of LEDs between the third and the first electrical wires;

20 the sixth illuminating unit comprises a plurality of LEDs between the third and the first electrical wires and being in parallel with the fifth illuminating unit;

a positive terminal of the fifth illuminating unit is electrically coupled to the third electrical wire, and a negative terminal thereof is electrically coupled to the first electrical wire; and

25 a positive terminal of the sixth illuminating unit is electrically coupled to the first electrical wire, and a negative terminal thereof is electrically coupled to the third electrical wire.

**15.** The rope light of claim 14, wherein the LEDs in each illuminating unit are electrically coupled together in series.

**16.** The rope light of claim 12, wherein the rope light has a section of square.

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**17.** The rope light of claim 12, wherein the rope light has a section of flat rectangle.

**18.** The rope light of claim 12, wherein the rope light has a section of oval.

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**19.** The rope light of claim 12, wherein the number of the electrical wires is four and the number of the illuminating units is twelve.

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**20.** The rope light of claim 12, wherein the number of the electrical wires is five and the number of the illuminating units is twenty.

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**21.** The rope light of claim 12, wherein the LED is a plate-shaped LED, COB (chip on board) type LED, SMD (surface mounting) LED, or LED dice bonding fixed on a circuit board by soldering extended conductive wires of the LED on the circuit board.

**22.** An elongated rope light, comprising:

an elongated mounting strap including an elongate, axial groove and two side ridges;

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a first and a second electrical wires longitudinally extended along the ridges, and a third electrical wire under the mounting strap;

a first, a second, a third, a fourth, a fifth, and a sixth illuminating units on

the groove, each illuminating unit being electrically coupled between any two electrical wires, and including a plurality of LEDs fixed on a circuit board wherein the LEDs in each illuminating unit are electrically coupled together in series by connecting conductive wires therebetween; the first LED is electrically  
5 coupled to a positive terminal of the illuminating unit; the last LED is electrically coupled to a negative terminal of the illuminating unit; a positive terminal of the first illuminating unit is electrically coupled to the first electrical wire, and a negative terminal thereof is electrically coupled to the second electrical wire; a positive terminal of the second illuminating unit is electrically coupled to the  
10 second electrical wire, and a negative terminal thereof is electrically coupled to the first electrical wire; a positive terminal of the third illuminating unit is electrically coupled to the second electrical wire, and a negative terminal thereof is electrically coupled to the third electrical wire; a positive terminal of the fourth illuminating unit is electrically coupled to the third electrical wire, and a negative  
15 terminal thereof is electrically coupled to the second electrical wire; a positive terminal of the fifth illuminating unit is electrically coupled to the third electrical wire, and a negative terminal thereof is electrically coupled to the first electrical wire; and a positive terminal of the sixth illuminating unit is electrically coupled to the first electrical wire, and a negative terminal thereof is electrically coupled  
20 to the third electrical wire; and

an outer cover layer for enclosing the first, the second, and the third electrical wires, and the first, the second, the third, the fourth, the fifth, and the sixth illuminating units by means of injection molding,

whereby applying a positive voltage to the first electrical wire with respect  
25 to the second electrical wire will lighten up the first illuminating unit with other illuminating units off, applying a positive voltage to the second electrical wire with respect to the first electrical wire will lighten up the second illuminating unit

with other illuminating units off; applying a positive voltage to the second electrical wire with respect to the third electrical wire will lighten up the third illuminating unit with other illuminating units off, applying a positive voltage to the third electrical wire with respect to the second electrical wire will lighten up the fourth illuminating unit with other illuminating units off; and applying a positive voltage to the third electrical wire with respect to the first electrical wire will lighten up the fifth illuminating unit with other illuminating units off, applying a positive voltage to the first electrical wire with respect to the third electrical wire will lighten up the sixth illuminating unit with other illuminating units off by enabling the Ac source to flow through the LEDs in each illuminating unit toward a predetermined direction when the LEDs are conducted.

**23.** The rope light of claim 22, wherein the LEDs in each illuminating unit are electrically coupled together in series.

**24.** The rope light of claim 22, wherein the rope light has a section of square.

**25.** The rope light of claim 22, wherein the rope light has a section of flat rectangle.

**26.** The rope light of claim 22, wherein the rope light has a section of oval.

**27.** The rope light of claim 22, wherein the number of the electrical wires is four and the number of the illuminating units is twelve.

**28.** The rope light of claim 1, wherein the number of the electrical wires is five and the number of the illuminating units is twenty.



**29.** The rope light of claim 1, wherein the LED is a plate-shaped LED, COB (chip on board) type LED, SMD (surface mounting) LED, or LED dice bonding fixed on a circuit board by soldering extended conductive wires of the LED on the circuit board.

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